

I. Amendments to the Claims

This listing of claims replaces without prejudice all prior versions and listings of claims in the application:

Listing of Claims:

Claims 1-175 (Cancelled)

176. (New) Apparatus for cooling a molded article made in an injection mold formed from mold halves, the molded article having a first region at a relatively high heat and an adjacent region at a relatively lower heat, the apparatus having:

an end-of-arm tool having at least one holder, the end-of-arm tool operational, in use, between a first position between the mold halves where it receives the molded article into a respective one of the at least one holder and a second position outside of the mold, the molded article located, in use, into the respective one of the at least one holders at a time when the molded article retains an amount of heat; and

a cooling pin on a frame located adjacent the second position, the cooling pin having a tip and the frame arranged, in use, to move relative to the end-of-arm tool to cause insertion of the tip of the cooling pin into the molded article

after the end-of-arm tool reaches the second position;

said cooling pin having an internal channel terminating at the tip that, upon insertion into the molded article by relative movement of the frame and the end-of-arm tool, is within the molded article but spaced away from the first region, and wherein the cooling pin, in use, is configured to be connectable to a cooling fluid delivery system arranged to force gaseous cooling fluid along the internal channel to cause expulsion of the gaseous cooling fluid from the tip mostly in a direction of the first region to accentuate cooling within at least the first region;

said frame being positioned, during the expulsion of the gaseous cooling fluid from the tip, with respect to the end-of-arm tool such as to define, in use, an open system having a passageway allowing venting of gaseous cooling fluid from an interior of the molded article to an ambient environment; and

said apparatus is configured to be operational, during the expulsion of gaseous cooling fluid from the tip, to distance the frame from the end-of-arm tool and the passageway of the open system is produced by formation of a space between a region of an external surface of the cooling pin and an open end of the molded article both located, in use, within the respective holder and positioned adjacent said region of the external surface of the cooling pin.

177. (new) Apparatus according to claim 176, wherein the apparatus is configured to introduce the tip of the cooling pin into the preform to a depth that allows the coolant to reach and cool an internal dome portion of a preform.

178. (New) Apparatus according to claim 176, wherein the frame positions the cooling pin within the molded article such that:

i) the tip is displaced a first distance (d) from the first region of the molded article;

ii) a sidewall of said cooling pin is located a second distance (D) from internal sidewalls of the molded article; and

a ratio of the first distance to the second distance (d: D) is in the range of about 1:1 to about 10:1.

179. (New) Apparatus according to claim 176, wherein the gaseous cooling fluid comprises cooled pressurized air that is blown along the internal channel.

180. (New) Apparatus according to claim 179, further including a valve for supplying regulated amounts of gaseous cooling fluid to the cooling pin.

181. (new) Apparatus according to claim 176, wherein the tip has one of a divergent nozzle construction and a straight-walled nozzle construction, and wherein the internal channel and tip, when located within the molded article, focus the gaseous cooling fluid towards a region principally surrounding a first region.

182. (New) Apparatus according to claim 176, wherein the cooling pin has one of:

- i) a varying diameter along its length;
- ii) lateral fluid outlets or radial conduits in the sides of the cooling pin, the lateral outlets or radial conduits coupled to the internal channel and arranged to direct cooling fluid to at least one of a neck portion and a body portion of the molded article;
- iii) grooves along an exterior surface of the cooling pin;
- iv) ribs spaced about the periphery of the cooling pin, the ribs protruding from the cooling pin to reduce, in use, over a length of each rib a dimensional separation of an exterior surface of the cooling pin to the internal wall of the molded article; and
- v) a plurality of contact elements along an exterior surface of the cooling pin.

183. (New) Apparatus according to claim 176,
wherein:

the end-of-arm tool supports a plurality of holders;

and

the frame includes fewer cooling pins than there are
holders on the end-of-arm tool;

whereby, in use, only selected ones of the molded
articles in respective holders are cooled by aligned insertion
of a tip of a cooling pin into each selected one of the molded
articles.

184. (New) Apparatus according to claim 176,
further comprising:

a suction device selectably connectable to the
cooling pin, the suction device being operational, in use,
after cooling of the molded article by expulsion of the gaseous
cooling fluid from the tip, to extract the molded article from
its respective holder by drawing the molded article towards the
tip under reduced pressure.